The listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended) A quantum well infrared photodetector comprising:

a plurality of doped quantum well layers forming a multi-quantum well structure, each doped quantum well layer having a doping density that is selected to be sufficiently large for providing high absorption at temperatures other than low temperatures; and,

contact layers for receiving current from the plurality of quantum well layers.

Claim 2 (original) A quantum well infrared photodetector according to claim 1 wherein the multi-quantum well structure is for providing high absorption at temperatures near room temperature.

Claim 3 (original) A quantum well infrared photodetector according to claim 2 wherein the plurality of doped quantum well layers includes more than 10 quantum well layers.

Claim 4 (original) A quantum well infrared photodetector according to claim 3 wherein the dopant concentration is selected to be sufficiently large for high absorption during near room temperature operation.

Claim 5 (currently amended) A quantum well infrared photodetector according to claim 4 wherein the doping density (Nd) of the doped quantum well layers is given by $Nd=(m/\pi \hbar^2)(2k_B T)$ ~~$Nd=(m/\pi\leftarrow^2)(2k_BT)$~~, where m is the effective mass, [[←]] $\hbar$ is the Planck constant, k_B is the Boltzmann constant, and T is the desired operating temperature in ~~degrees K~~ Kelvins.

Claim 6 (currently amended) A quantum well infrared photodetector according to claim 5 wherein the multi-quantum well structure includes a plurality of barrier layers alternating with the doped quantum well layers, the doped quantum well layer material comprising ~~is~~

GaAs, the barrier layer material comprising ~~is~~ Al GaAs, and the operating temperature is room temperature, the dopant species comprising Si, and Nd being ~~is~~ in the range of 1 – 2E12 cm^{-2}.

Claim 7 (original) A quantum well infrared photodetector according to claim 6 wherein the contact layers are formed of GaAs doped with Si to a concentration of 1E17 to 5E18 cm^{-3}.

Claim 8 (cancelled)

Claim 9 (currently amended) A quantum well infrared photodetector comprising:

a plurality of quantum well layers formed of a first semiconductor material and doped forming a multi-quantum well structure for providing high absorption at temperatures other than low temperatures and substantial dark current;

barriers between the quantum well layers formed of a second semiconductor material; and,

contact layers comprising a third doped semiconductor material,
wherein the dopant for doping the first semiconductor material has a dopant concentration that is selected to be sufficiently large for providing high absorption during near room temperature operation.

Claim 10 (original) A quantum well infrared photodetector according to claim 9 wherein temperatures other than low temperatures include temperatures at or near room temperature.

Claim 11 (original) A quantum well infrared photodetector according to claim 10 wherein the first semiconductor material is GaAs.

Claim 12 (original) A quantum well infrared photodetector according to claim 11 wherein the dopant for doping the first semiconductor material is Si.

Claim 13 (currently amended) A quantum well infrared photodetector according to claim 12 wherein the dopant concentration of the Si is approximately 1 – 2E12 cm^{-2}.

Claim 14 (currently amended) A quantum well infrared photodetector according to claim 13 wherein the second semiconductor material is Al GaAs.

Claim 15 (currently amended) A quantum well infrared photodetector according to claim 14 wherein the fraction of Al is from 10%-50%.

Claim 16 (original) A quantum well infrared photodetector according to claim 15 wherein the third doped semiconductor material is GaAs doped with Si.

Claim 17 (original) A quantum well infrared photodetector according to claim 16 wherein the third doped semiconductor material is doped with Si to a concentration of 1E17 to 5E18 cm^{-3}.

Claim 18 (original) A quantum well infrared photodetector according to claim 17 wherein the third doped semiconductor material of a thickness within a range of 0.1-2 μm.

Claim 19 (currently amended) A quantum well infrared photodetector according to claim [[8]] 18 wherein the plurality of doped quantum well layers is designed for operation at frequencies above 1 GHz.

Claim 20 (previously presented) A quantum well infrared photodetector according to claim 19 wherein the plurality of doped quantum well layers is designed for operation at frequencies above 30 GHz.

Claim 21 (currently amended) A method of detecting infrared radiation comprising the steps of:

utilizing the quantum well infrared photodetector of claim 4, detecting infrared radiation ~~with a quantum well device~~ absent cryogenic cooling; and,

determining an intensity of the detected infrared radiation.

Claim 22 (previously presented) A method of detecting infrared radiation according to claim 21 wherein the step of determining comprises the step of:

filtering the dark current component of the detected signal to determine an intensity of the detected infrared radiation.

Claim 23 (previously presented) A method of detecting infrared radiation according to claim 21 wherein the step of detecting is performed at or near room temperature.

Claim 24 (new) A quantum well infrared photodetector comprising:

a plurality of doped quantum well layers formed of GaAs doped with Si, a doping density of each doped quantum well layer of the plurality of doped quantum well layers being in the range of 1E12 cm^{-2} to 2E12 cm^{-2};

a plurality of barrier layers formed of Al GaAs, the barrier layers alternating with the quantum well layers so as to form a multi-quantum well structure for providing high absorption at temperatures other than low temperatures; and,

contact layers for receiving current from the plurality of quantum well layers.